

BOOK REVIEW

Natural History of the Colorado Plateau and Great Basin. K. T. Harper, L. L. St. Clair, K. H. Thorne, and W. M. Hess, editors. University Press of Colorado, Niwot, CO. 1994. 294 pp. \$24.95 hardback.

Natural History of the Colorado Plateau and Great Basin, a multi-authored volume, is an introduction to the spectacular arid and remote North American landscape known as the Colorado Plateau and the Great Basin. The high, windswept plateau country is interrupted by numerous rocky canyons and arid valleys, and the Great Basin is a huge arid depression with no external drainages. According to the editors, this region is within the boundaries of Nevada, Utah, and Colorado (Fig. 1.2). They indicate that the intended audience of the volume includes students and managers of the region's natural resources. The basic objective of the major eleven chapters is to provide a "ready reference to the best of recent studies that are relevant to the region." Additionally, the editors hope this volume will stimulate more research, especially on the Colorado Plateau, which is more "biodiverse and perhaps more fragile ecologically than the Great Basin."

The map in Chapter 1 of the Great Basin and Colorado Plateau indicates a smaller region than maps in Chapters 2, 5, and 9, excluding areas as far north as Oregon and as far south as California, Arizona, and New Mexico. The boundaries of the Great Basin and Colorado Plateau therefore appear mildly confusing. A consensus map or better textual description (as presented in Chapter 5) could have been included in Chapter 1.

Chapter 2 presents a rather concise and useful review of the geologic history of the Great Basin and Colorado Plateau. Chapter 3 attempts to summarize the complex climatic weather patterns in the broad context of the western United States and the globe. Anyone who has spent time in the Great Basin or Colorado Plateau knows well the unpredictable and often extreme weather patterns that

have helped form the regional geomorphology. Literature citations of this chapter are very useful.

Chapter 4 reviews the extinct late Pleistocene mammals of the Great Basin. This region is rich in late Pleistocene vertebrate fossils, and the author provides a discussion of the possible causes of extinction and implications concerning present faunas. Western Great Basin archaeology in the context of regional cultural/environmental models is presented in Chapter 5. Wilde describes various prehistoric ebbs and flows of peoples for the past 12,000 years. Chapter 6 touches on the current politically controversial subject of the changes in plant communities caused by domestic livestock grazing, the most widespread land-management practice in western North America. Seventy percent of the western United States is grazed, and ecological costs have been great. The author seems to concentrate on deleterious effects of the introduction of alien plants species such as Russian thistle and cheatgrass on the Great Basin plant communities. He predicts that with continued removal of cattle, the "predators" of these plants, the ecosystem structure of the Great Basin may dramatically change in the near future.

In Chapter 7 Jackson presents an enjoyable analysis of the unique factors that have influenced modern human development of resources in the Great Basin. He traces the cultural history of the region, from the Dominguez and Escalante expeditions of the 1700s to the Mormon farmers who shaped the modern human geography of the Great Basin. As Jackson pointed out, the enduring legacy of the Great Basin is the "strange juxtaposition of religion and vice, destruction and recreation." The authors in Chapter 8 use macrofossil data from packrat (*Neotoma*) middens to reconstruct the evolutionary history of eight modern conifer species. These conifer species now occupy the montane islands of the Great Basin, and the current distribution of these trees is related to past paleoclimatic changes.

Sigler and Sigler in Chapter 9 present a very comprehensive review of the fishes of the Great Basin and the Colorado Plateau. Excellent discussions are presented for each species. However, there appear to be some errors; for example, the Big Spring spinedace is a native to the Colorado River Basin, not Lahontan, and the razorback sucker is a federally endangered species as of 1991. Additionally, if the map presented in this chapter is inclusive, then perhaps several other species could be added: Moapa dace, Moapa speckled dace, Meadow Valley speckled dace, Preston speckled dace, White River sucker, and Sonora sucker. Also, I cannot construe the meaning of the last sentence in their chapter, "that many of the species, both native and exotic, have survived in spite of [human] modifications." The fact is, at least for the Colorado River Basin, most native fishes are in serious jeopardy of extinction; they have survived, but with a very precarious hold.

Chapter 10 by Nelson attempts to cover a daunting subject, the insects of the Great Basin and Colorado Plateau. An estimated 14,000–26,000 species may occur within these boundaries. He discusses several of the better regional known taxonomic groups (stoneflies, butterflies, robber flies, and ants) to answer broad questions, such as, "What range patterns are seen in the Great Basin and Colorado Plateau?" and "Did these groups evolve in the Great Basin?" Many of the insects of this region have a widespread distribution throughout the West, and the insect fauna of the Colorado Plateau have strong affinities with the Rocky Mountains physiographic province. Warren and Harper in Chapter 11 briefly discuss elevational patterns of insects in the Great Basin

and Colorado Plateau. Most of their examples, however, are higher elevational patterns of the Rocky Mountains and elsewhere, and the discussion is limited to adaptations of insects to harsh environments. Their literature review is excellent.

In Chapter 12, Mead and Bell describe the herpetofauna of the Great Basin and Colorado Plateau in the late Pleistocene and Holocene (i.e., during the past two million years, or Quaternary Period). Their comparison of modern fauna with the Pleistocene-Holocene indicates that 61% of the modern fauna is represented in the fossil record, an interesting observation considering the climatic and environmental change in association with such events as ice ages.

In Chapter 13 the editors provide recommendations for future directions of research, emphasizing the need for descriptive work. They also state evolutionary and ecological questions about the biodiversity of the Great Basin and Colorado Plateau that need urgent attention.

This little book packs in much useful information, and with its reasonable price it should appeal to all students who work or visit the Intermountain West. The editors have succeeded in presenting a good introduction to many important and conspicuous aspects of the natural history of the Great Basin and Colorado Plateau.

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